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10/523,011	02/01/2005	Michiyuki Sugino	1152-0315PUS1	7483

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EXAMINER	
XIAO, KE	

ART UNIT	PAPER NUMBER
2629	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)	
	10/523,011	SUGINO ET AL.	
	Examiner	Art Unit	
	Ke Xiao	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 April 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23,34-38 and 40-50* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23,34-38 and 40-50* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-23, 34-38 and 40-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirakata (US 2002/0067332) in view of Shirahama (US 7,151,572).

Regarding **Claim 1**, Hirakata teaches a liquid crystal display device, comprising:

a section that detects a type of content of an image to be displayed on a liquid crystal display panel based on additional information as to motion blur (Hirakata, paragraph [0031]); and

a section that variably controls the illumination duration of a backlight within one frame period based on the detected type of the content of the image (Hirakata paragraph [0032] backlight changes lighting modes when a motion picture is detected, Fig. 9A-9E, all the periods shown in Figs. 9C - 9D are the same, *one frame*, but the duty cycle of the pulses are changed).

wherein the image signal to be displayed is written into a liquid crystal display panel while a backlight is activated intermittently within the one frame period (Hirakata, Figs. 1A-1E).

for a type of content of an image that entails a large amount of motion blur, the corresponding illumination duration is decreased within the one frame period (Hirakata, paragraph [0034], larger motion equals smaller duty cycle), and

for a type of content of an image that entails a small amount of motion blur, the corresponding illumination duration is increased within the one frame period (Hirakata, paragraph [0034], smaller motion equals larger duty cycle).

Hirakata fails to teach:

that the detecting is based on information other than the image signal to be displayed, the detected type of content being based on classification defined in electronic program information;

a section that stores a plurality of predetermined illumination duration which respectively correspond to possible types of content of an image; and

the variably controlling is based on the detected type of content of the image according to the stored illumination duration which corresponds to the detected type of content of the image.

Shirahama teaches:

that the detecting is based on information other than the image signal to be displayed, the detected type of content being based on classification defined in electronic program information (Shirahama, Col. 3 lines 50-58 detects the type of content retrieved from EPG);

a section that stores a plurality of predetermined brightness settings which respectively correspond to possible types of content of an image (Shirahama, Figs. 4 and 5 presets for each type of content are stored in memory); and

the variably controlling is based on the detected type of content of the image according to the stored brightness settings which corresponds to the detected type of content of the image (Shirahama, Figs. 4 and 5 presets are loaded when the type of content is detected).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the type of content detection and display image optimization technique in combination with the brightness adjustment system of Hirakata in order to provide a more optimized and automatic adjustment for each type of content of image being displayed by the LCD.

It should be noted that Shirahama specifically teaches storing brightness settings but does not specifically teach storing illumination durations. However Hirakata teaches variable duties cycles that make up different brightness settings, therefore the references taken together would meet the limitations of storing and controlling the variable illumination durations according to the type of content being displayed.

Regarding **Claim 11**, Hirakata teaches a liquid crystal display device, comprising:

a section for detecting a type of content of the image to be displayed on the liquid crystal display panel (Hirakata, paragraph [0031]); and

a section that variably controls a duration in which a black display signal is supplied to the liquid crystal display panel based on the detected type of the content of

the image (Hirakata, Figs. 1A-1E and 2 scan lines are scanned and black is displayed, paragraph [0020-0027 and 0128]).

wherein an image signal to be displayed and a black display signal are written into a liquid crystal display panel within one frame period (Hirakata, Figs. 1A-1E, paragraph [0128]).

Hirakata fails to teach:

that the detecting is based on information other than the image signal to be displayed, the type of content being based on classification defined in electronic program information;

a section that stores a plurality of predetermined illumination durations, for illumination of a backlight, which respectively correspond to possible types of content of an image; and

variably controlling both the black display signal as well as the illumination duration based on the detected type of content of the image according to the stored illumination duration which corresponds to the detected type of content of the image.

Shirahama teaches:

a section that detects a type of content of an image to be displayed (Shirahama Figs. 4 and 5, type of content detection);

that the detecting is based on information other than the image signal to be displayed, the type of content being based on classification defined in electronic program information (Shirahama, Col. 3 lines 50-58 the type of content of the image retrieved from EPG);

a section that stores a plurality of predetermined brightness settings which respectively correspond to possible types of content of an image (Shirahama, Figs. 4 and 5 presets for each types of content are stored in memory); and

variably controlling both the black display signal as well as the illumination duration based on the detected type of content of the image according to the stored illumination duration which corresponds to the detected type of content of the image (Shirahama, Figs. 4 and 5 presets are loaded when type of content is detected).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the type of content detection and display image optimization technique in combination with the brightness adjustment system of Hirakata in order to provide a more optimized and automatic adjustment for each type of content of image being displayed by the LCD.

It should be noted that Shirahama specifically teaches storing brightness settings but does not specifically teach storing illumination durations. However Hirakata teaches variable duties cycles that make up different brightness settings, therefore the references taken together would meet the limitations of storing and controlling the variable illumination durations according to type of content. Also the black display duration is inversely proportional to the illumination duration which means it would also be based on the detected type of content.

Regarding **Claim 18**, Hirakata teaches a liquid crystal display device comprising:

a section for detecting a type of content of an image to be display on a liquid crystal display panel based on additional information as to motion blur (Hirakata, paragraph [0031]), and

a section for variably controlling a ratio of display duration of the image display in one frame period, based on the detected type of the content of the image (Hirakata, paragraph [0032]).

wherein display duration of an image signal and non-display duration are provided in one frame period (Hirakata, Figs. 1A-1E).

Hirakata fails to teach:

a section that detects a type of content of an image to be displayed;

that the detecting is based on information other than the image signal to be displayed, the type of content being based on classification defined in electronic program information;

a section that stores a plurality of predetermined illumination duration which respectively correspond to possible type of contents of an image; and

variably controlling both the black display signal as well as the illumination duration based on the detected type of content of the image according to the stored illumination duration which corresponds to the detected type of content of the image.

Shirahama teaches:

a section that detects a type of content of an image to be displayed (Shirahama Figs. 4 and 5, type of content detection);

that the detecting is based on information other than the image signal to be displayed, the type of content being based on classification defined in electronic program information (Shirahama, Col. 3 lines 50-58 type of content retrieved from EPG);

a section that stores a plurality of predetermined brightness settings which respectively correspond to possible type of contents of an image (Shirahama, Figs. 4 and 5 presets for each type of content are stored in memory); and

variably controlling both the ratio of display duration of the image signal as well as the illumination duration based on the detected type of content of the image according to the stored illumination duration which corresponds to the detected type of content of the image (Shirahama, Figs. 4 and 5 presets are loaded when type of content is detected).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the type of content detection and display image optimization technique in combination with the brightness adjustment system of Hirakata in order to provide a more optimized and automatic adjustment for each type of content of image being displayed by the LCD.

It should be noted that Shirahama specifically teaches storing brightness settings but does not specifically teach storing illumination durations. However Hirakata teaches variable duties cycles that make up different brightness settings, therefore the references taken together would meet the limitations of storing and controlling the variable illumination durations according to type of content. Also the ratio proportional

to the illumination duration which means it would also be based on the detected type of content.

Regarding **Claim 35 and 36**, Hirakata teaches a liquid crystal display device, comprising:

a section for detecting a type of content of the image to be displayed on the liquid crystal display panel (Hirakata, paragraph [0031]); and

a section for variably controlling the duration in which a black display signal is supplied at least one picture element of a liquid crystal display panel based on the detected type of the content of the image (Hirakata, Figs. 1A-1E and 2, paragraphs [0020-0027 and 0128]);

wherein an image signal to be displayed and a black display signal are written into at least one picture element of the liquid crystal display panel within one frame period (Hirakata, Figs. 1A-1E and 8A-8D, the black levels are dependent on the backlight illumination times and adjusting the black levels then adjusts the image signals in turn when ever there is no image signal the display is displaying a black signal).

the gray scale levels of the input image signal applied to the at least one picture element and the gray scale voltages applied to the display crystal display panel in response to the input image signal are varied depending on the application of the black display signal such that a relationship between the input image signal and the display brightness is held constant (Hirakata, Figs. 1A-1E, 8A-8D).

Hirakata fails to disclose a section for detecting a user's instructional input. Shirahama discloses a section for detecting a user's instructional input which defines

the type of image to be displayed as well as changing the brightness setting according to the user's instructional input Shirahama, Col. 2 lines 34-3.

It would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Hirakata, and have the input be user instructional input, as taught by Shirahama, thus enabling the user to adjust the display brightness *in addition* to the automatic adjustments made by Hirakata.

Regarding **40 and 41**, Hirakata teaches a liquid crystal display device, comprising:

a section for detecting a type of content of the image to be displayed on the liquid crystal display panel (Hirakata, paragraph [0031]); and

a section that variably controls a ratio of display duration of an image signal within one frame period, based on the detected type of the content of the image (Hirakata, Figs. 1A-1E, paragraph [0128]);

wherein the display duration of the image signal and the non-display duration are provided in the one frame period (Hirakata, Figs. 1A-1E and 8A-8D, the black levels are dependent on the backlight illumination times and adjusting the black levels then adjusts the image signals in turn when ever there is no image signal the display is displaying a black signal).

the gray scale levels of the input image and the gray scale voltages in response to the input image signal to be applied to picture elements of a liquid crystal display panel of the display crystal display device are varied depending on the ratio of the display duration of the image signal in the one frame period such that a relationship

between the input image signal and the display brightness is held constant (Hirakata, Figs. 1A-1E, 8A-8D).

Hirakata fails to disclose a section for detecting a user's instructional input. Shirahama discloses a section for detecting a user's instructional input which defines the type of image to be displayed as well as changing the brightness setting according to the user's instructional input Shirahama, Col. 2 lines 34-3.

It would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Hirakata, and have the input be user instructional input, as taught by Shirahama, thus enabling the user to adjust the display brightness *in addition* to the automatic adjustments made by Hirakata.

Regarding **Claim 2**, Hirakata further teaches wherein the backlight emits a flash of light over the full screen every one frame period in synchronization with a vertical synchronizing signal supplied to the liquid crystal panel (Hirakata, Figs. 1A-1E backlight is synced with the vsync signal).

Regarding **Claim 3**, Hirakata further teaches that the backlight is operated so that multiple luminous sections are activated one to the next, scan wise in synchronization with vertical and horizontal synchronizing signals supplied to the liquid crystal display panel (Hirakata, Figs. 17B).

Regarding **Claim 4, 12 and 34**, Hirakata further teaches that the luminous intensity of the backlight is varied in accordance with the illumination duration of the backlight and the application duration of the black display signal (Hirakata, Figs. 1A-1E paragraph [0110]).

Regarding **Claim 5, 6, 13, 14, 19 and 20**, Hirakata further teaches wherein gray scale levels of the input image signals and the gray scale voltages applied to the liquid crystal display panel in response to the input image signal are varied depending on the illumination duration of the backlight, the application duration of the black display signal and the ratio of the display duration of the image signal in the one frame period, such that the input image signal and the display brightness is held constant (Hirakata, Figs. 9A-9B, paragraphs [0031-0032, 0110] gray signals and black signals change when backlight changes amplitudes change to maintain brightness).

Regarding **Claim 7**, Hirakata in view of Shirahama further teaches wherein the frame frequency of the input image signal is varied based on the type of content of the image (Hirakata, paragraph [0110], Shirahama Figs. 5A and 5B).

Regarding **Claims 8, 15 and 21**, Hirakata in view of Shirahama further teaches that the electronic program information is included in program guide information included in broadcast data (Shirahama, Col. 3 lines 50-58 type of contents retrieved from EPG).

Regarding **Claim 9, 16 and 22**, Hirakata in view of Shirahama further teaches wherein electronic program information is included in contents information obtained from external media (Hirakata, paragraph [0010] television is considered external media motion picture is detection from the contents information which is the image, Shirahama Figs. 5A and 5B).

Regarding **Claim 10, 17 and 23**, Hirakata in view of Shirahama further teaches that the electronic program information is based on video source select command information input by the user (Shirahama, Col. 2 lines 34-36).

Regarding **Claims 37, 38, 42 and 43**, Hirakata in view of Shirahama further teaches that the application duration of the black display signal as well as the ratio of the display duration in the one frame period are varied (Hirakata, paragraphs [0031-0032, 0110] gray signals and black signals as well as display light ratio change when backlight changes) based on video source select command or video adjustment command information input by the user (Shirahama, Col. 2 lines 34-36).

Regarding **Claim 44**, Hirakata further teaches wherein the luminous intensity of a backlight that illuminates the LCD panel is varied accordance with the application duration of the black display signal (Hirakata, Figs. 8A-8D).

Regarding **Claims 45 and 46**, Hirakata in view of Shirahama further teaches wherein the application duration of the black display signal is varied (Hirakata, Figs. 8A-8D) based on video source select command and/or video adjustment command information input by the user (Shirahama, Col. 2 lines 34-36).

Regarding **Claims 47 and 48**, Hirakata in view of Shirahama further teaches wherein the ratio of the display duration of the image signal in the one frame period is varied (Hirakata, Figs. 1A-1E and 8A-8D) based on video source select commander and/or video adjustment command information input by the user (Shirahama, Col. 2 lines 34-36).

Regarding **Claims 49 and 50**, Hirakata in view of Shirahama further teaches wherein the plurality of predetermined illumination duration are set in such a manner that when the type of content of the image entails a large amount of motion blur, the corresponding illumination duration is decreased within the one frame period, and when the type of content of the image entails a small amount of motion blur, the corresponding illumination duration is increased within the one frame period (Hirakata, Figs. 9A-9E, paragraph [0034] and Shirahama, Fig. 5A and 5B).

Response to Arguments

The 112 1st rejections with regards to claims 1-23 have been withdrawn.

Applicant's arguments filed April 12th 2010 have been fully considered but they are not persuasive.

The applicant argues that "amount of motion" is not synonymous to "motion blur". However the examiner believes that there is a accepted specific definition for "motion blur". It can be both unwanted or wanted blurring of a picture during fast motion. The prior art in question, Hirakata, teaches the use of backlight and data voltage variation according to the amount of motion in order to reduce the amount of blurring in the motion picture. The examiner believes that this satisfies the claim language as there is no definition of the term "motion blur" *within* the claims.

The applicant further argues that prior art fails to teach newly added limitation "the input image signal to be applied to picture elements" or a similar limitation as claimed. The examiner has since cited paragraph [0020-0027] from Hirakata that

teaches this limitation. Paragraph [0020-0027] states that video data is inputted synchronous to the backlight which means that when the backlight is dark, the input data is representative of black data as there is zero light passing through the LC.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ke Xiao whose telephone number is (571)272-7776. The examiner can normally be reached on Monday through Friday from 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sumati Lefkowitz/
Supervisory Patent Examiner, Art Unit 2629

/Ke Xiao/
Examiner, Art Unit 2629